



Faculty of Computer Studies (FoCS)

Course Name: Image Processing

(UG/PG): PG

Number of Credits: 4

Level: 4

Learning Objectives: The major focus of this course is to introduce digital image processing to apply it for many real world applications like of office automation, disease diagnosis, signal processing speech and text identification and so on.

Pre-learning:

Signal and systems or equivalent required; familiarity with linear algebra is required.

Pedagogy:

Lectures

Class work discussion

Course Outline:

Sr. No.	Topic	Hours
1	Course Overview: Digital Image Processing Fundamentals, components of an image processing system, Image sampling and quantization, Some basic relationships between pixels.	7
2	Image Enhancement in the Spatial Domain: gray level transformations, Histogram processing, Enhancement using arithmetic/logic operations.	9
3	Image Enhancement in Frequency Domain, Fourier Transformation, smoothing and sharpening frequency domain filters.	15
4	Image Restoration: Model of the image degradation/restoration process, Noise models, Restoration in the presence of Noise only-spatial filtering.	10
5	Periodic Noise Reduction by frequency domain filtering. Inverse image filtering, Minimum mean square error filtering. Least square filtering.	9
6	Case Study	10
	Total	60

Books Recommended:

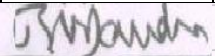
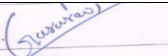
1. Rafael Gonzalez and Richard Woods: Digital Image Processing, 3rd Edition, Pearson Education.
2. Anil. K Jain: Fundamentals of Digital Image Processing, PHI.
3. Chanda and Mujumdar: Fundamentals of Digital Image Processing and Analysis, PHI.

Suggested Evaluation Methods:

Multiple Choice Test
Test
Assignments

Parallel/Similar courses the existing curriculum:

S.No.	Name of the course	Institute where it was offered
1	Image Processing	University of California
2	Computer Vision and Image Processing	Ohio State University
3	Image Processing and Computer Vision	IITD

Name of Member	Dr. Dhandra	Dr. Gururaj			
Designation	Professor	Assistant Professor			
Org. / Inst.	SICSR	SICSR			
Signature					

Name of the Expert:

Signature:

Date:

